

### **ABSTRACT**

The invention provides acid sensitive cation channel proteins which are capable of reversibly mediating (i) a rapid, and (ii) a sustained cation current, particularly the SPASIC protein or variants (e.g. homologues or fragments) thereof. Also provided are nucleic acids encoding these, or which have utility in probing, amplifying or down-regulating these. Methods of providing the proteins and nucleic acids are disclosed, as are vectors, host cells, and organisms utilising them, and antibodies. Also disclosed are methods of influencing the electrophysiological and/or pharmacological properties of a cell (e.g. by way of therapy) based on manipulation of the proteins or nucleic acids, and methods for screening for substances having ion-channel modulating activity (which may be potential analgesics; neuromodulatory agents; anti-inflammatory agents; agents that regulate neurotransmitter release neuronal excitability).